STRATEGY RESEARCH PROJECT

The views expressed in this paper are those of the author and do not necessarily reflect the views of the Department of Defense or any of its agencies. This document may not be released for open publication until it has been cleared by the appropriate military service or government agency.

U. S. STRATEGIC NUCLEAR FORCES IN THE POST STRATEGIC ARMS REDUCTION TALK WORLD: IS THERE A FUTURE FOR NUCLEAR DETERRENCE?

BY

CAPTAIN ROBERT J. FILLER
United States Navy

19980417 066

DISTRIBUTION STATEMENT A:
Approved for public release.
Distribution is unlimited.

USAWC CLASS OF 1998

U.S. ARMY WAR COLLEGE, CARLISLE BARRACKS, PA 17013-5050

DTIC QUALITY INSPECTED 3

USAWC STRATEGY RESEARCH PROJECT

U.S. Strategic Nuclear Forces in the Post Strategic Arms Reduction Talk World: Is there a Future for Nuclear Deterrence?

by

CAPT Robert J. Filler

CDR Paul Kast
Project Advisor

The views expressed in this paper are those of the author and do not necessarily reflect the views of the Department of Defense or any of its agencies. This document may not be released for open publication until it has been cleared by the appropriate military service or government agency.

U.S. Army War College
CARLISLE BARRACKS, PENNSYLVANIA 17013

DISTRIBUTION STATEMENT A:
Approved for public release.
Distribution is unlimited.

DTIC QUALITY INSPECTED 3

ABSTRACT

AUTHOR: Robert J. Filler, CAPT, USNR

TITLE: U.S. Strategic Nuclear Forces in the Post Strategic Arms Reduction Talk World: Is there a Future for Nuclear Deterrence?

FORMAT: USAWC Strategy Research Project

DATE: 6 April 1998 PAGES: 38 CLASSIFICATION: Unclassified

Following victory in the Cold War, the Soviet threat that shaped United States' nuclear deterrent strategy for the past 40 years, is gone. That defined, monolithic threat has been replaced by a diverse array of new challenges including proliferation of nuclear, chemical and biological Weapons of Mass Destruction (WMD) among regional powers, rogue states and non-state actors. In the face of this emerging WMD threat, the United States is dismantling its chemical and biological weapons stockpile and remains committed to further reductions in its nuclear arsenal. Can a reduced U.S. nuclear weapons arsenal provide a credible deterrent to the growing threat posed by proliferation of WMD? Finally, in light of the current Revolution in Military Affairs (RMA), is it time to reduce our dependence on nuclear weapons and pursue other deterrent options?

TABLE OF CONTENTS

ABSTRACT iii

CONCEPT OF DETERRENCE 2

EVOLUTION OF U.S. DETERRENT STRATEGY 4

CURRENT U.S. DETERRENT STRATEGY 6

THE POST COLD WAR THREAT 9

WEAPONS OF MASS DESTRUCTION DELIVERY SYSTEMS 14

ARMS CONTROL IMPLICATIONS 16

DETERRENT OPTIONS 19

CONCLUSIONS 22

ENDNOTES 27

BIBLIOGRAPHY 31

The purpose of this paper is to review and analyze the national security strategy for nuclear deterrence. The fundamental question this paper seeks to answer is whether or not the policy of nuclear deterrence, which has been the cornerstone of U.S. strategic military policy throughout the Cold War, is still relevant in the post Cold War world?

The U.S. remains committed to the Strategic Arms Reduction Talks (START) process which will significantly reduce its nuclear stockpile beyond reductions already agreed to in START I. The U.S. is also committed to eliminating its stockpiles of chemical and biological weapons. As the U.S. sheds its Weapons of Mass Destruction (WMD), proliferation of WMD has increased over the past decade. Currently 24 countries are confirmed or suspected of possessing an offensive chemical weapons capability. Twelve countries have, or are suspected of having, offensive biological weapons programs. Sixteen nations have or are developing a nuclear weapons capability.[1] Can a reduced U.S. arsenal of nuclear weapons provide a credible deterrent to the growing threat posed by proliferation of WMD?

To answer this difficult question, the concept of deterrence will be explored in terms of both pre and post Cold War objectives. The evolution of current deterrent strategy will be explored using the "ends-ways-means" model as a framework for analysis. The current and projected threat posed by

proliferation of WMD will be examined. The impact of arms control initiatives, particularly chemical and biological weapons treaties, on the relevancy of nuclear deterrence will be discussed. Finally, recommendations regarding future deterrent policy, forces and possible alternatives will be presented.

CONCEPT OF DETERRENCE

"Deterrence is the inducement of another party to refrain from a certain action by means of a threat that this action will lead the threatener to inflict retaliation or punishment."[2] For deterrence to be effective, rational individuals in positions of authority must be persuaded that the credible prospect of devastating retaliation far outweighs any potential gains from a specific course of action.

The concept of deterrence is not new. Conventional deterrence both before and after the advent of nuclear weaponry has enjoyed few successes. With purely conventional forces, the cost to the aggressor for miscalculating the prospects of retaliation is seldom immediate or overwhelming. There exist numerous examples throughout history when superior forces were defeated as a result of the luck, tactical skill or inspired leadership of a smaller force. When the threat of deterrence is not immediate, overwhelming or devastating to an aggressor there is potential for failure.

Nuclear weapons significantly reduce the potential for deterrence to fail. If targets deep in the homeland of an aggressor are vulnerable to retaliatory nuclear strikes the cost of retaliation will likely outweigh any potential benefit from the aggressor's course of action. For deterrence to succeed, communication with a potential aggressor is necessary to convey the fact that a credible deterrent force exists and that it will be employed if threatened. Deterrence strategy assumes the aggressor is rational, possesses fundamental values and some form of political structure that can be influenced. These assumptions may not be applicable when dealing with rogue states or non-state actors.

The term "extended deterrence" is used to describe a relationship in which a nuclear-capable country extends its deterrent capability to its allies. This is accomplished by communicating that an attack on its allies will be considered an attack on itself. The extension of American nuclear deterrence is often cited as the reason that Germany and Japan have not developed nuclear weapons despite the fact they clearly possess the requisite technology.

Throughout the Cold War, U.S. nuclear deterrence was focused on the Soviet threat, both nuclear and conventional. To enhance credibility, limitations on the use of nuclear deterrence have been proposed. These limitations include pledges of no-first-use, first offered by President Kennedy and more recently, no use

against non nuclear-capable states. The use and effectiveness of nuclear deterrence against chemical or biological WMD or regional powers with limited nuclear capability is the subject of current debate.

EVOLUTION OF U.S. DETERRENT STRATEGY

The "ends-ways-means" of nuclear deterrence strategy has evolved from the end of World War II to the present. The "ends" or objective of U.S. nuclear deterrent strategy has remained fairly consistent throughout the Cold War, deterring the Soviet Union from waging nuclear or large scale conventional war on the U.S. or our treaty allies. The post Cold War objective has been expanded as stated in the 1994 Nuclear Posture Review to include deterrence against other weapons of mass destruction (WMD) and the reduction of nuclear proliferation.[3]

The "ways" or policies of nuclear deterrence strategy have evolved and adapted to changes in the political climate as well as weapons technology. Following failure of the Baruch Plan, the U.S. proposal for nuclear disarmament in 1946, the Truman administration significantly increased the nation's nuclear stockpile and developed a pre-emptive counterforce strike option.[4] During the Eisenhower administration, the policy of massive retaliation was developed integrating nuclear strategy with foreign policy, the defense of Western Europe. A Single Integrated Operational Plan (SIOP) for general nuclear war was

established. The 1960 SIOP supported the policy of Massive Retaliation by employing 3,500 weapons against the Sino-Soviet Bloc in a single strike against both counterforce and countervalue targets.[5]

President Kennedy's pledge of no-first-use of nuclear weapons shifted strategy toward deterrence and retaliation. This policy was coupled with a second strike counterforce strategy plus the withholding of a weapon reserve sufficient in size to ensure destruction of Soviet urban areas, "assured destruction". Newly developed U.S. early warning systems ensured the survivability of the strategic bomber force in the event of a Soviet pre-emptive first strike, enabling a credible second strike option.

As Soviet forces achieved parity, the policy of assured destruction became known as Mutually Assured Destruction (MAD). Subsequent administrations adapted a flexible response (counterforce) doctrine. Increased emphasis was placed on targeting military and political assets including hardened ICBM and leadership relocation sites.

The "means" of nuclear deterrence for the past four decades has been the air-ground-sea force Triad. Current force levels reflect significant reductions in delivery systems and warheads agreed upon as a result of the Strategic Arms Reduction Talks (START I). The air leg of the Triad currently consists of 71 B-52H and 21 B-2 bombers. The land based ICBM force is a mix of

500 Minute Man III and 50 MX sites. D-5 Sea Launched Ballistic Missiles (SLBMs) are carried by a force of 18 Trident submarines each with 24 missiles. Additional U.S. nuclear forces consist of air and sea launched nuclear capable cruise missiles. Intermediate Range Nuclear Forces (INF) weapons, including both ballistic and cruise missiles, were part of the U.S. deterrent arsenal until ratification of the INF treaty in 1988. Tactical weapons, including all ground force and naval systems, have been unilaterally reduced by approximately 90 percent from peak levels in the 1980s.[6]

CURRENT U.S. DETERRENT STRATEGY

In 1993, the Department of Defense initiated a yearlong review of U.S. nuclear posture, the first review since dissolution of the Soviet Union. Current strategy, as stated in the 1994 Nuclear Posture Review (NPR), reaffirmed the need for a nuclear deterrent capability and cited four strategic objectives ("ends"):

- A hedge against possibility of reversal of democratic reforms in Russia.
- To allow for the possibility of armed confrontation with a regional power with WMD capability.
- To extend deterrence to major allies.
- To discourage or reduce nuclear proliferation.

Additionally, the NPR rebalanced U.S. strategic forces to be

consistent with the START II ceiling of 3500 warheads. It rejected a no-first-use pledge and recommended keeping U.S. nuclear weapons in Europe.[7]

The first strategic application of deterrence listed in the NPR deals with maintaining a hedge against the possibility of a reversal in our current relationship with Russia. The reduced force structure under START I provides an adequate level of deterrent forces against an adversarial Russia since strategic warhead parity is maintained.

The second strategic application cited in the NPR is concerned with confronting a WMD-capable regional power. The effectiveness of employing nuclear deterrence against a regional power with WMD was clearly demonstrated in the Gulf War. In the aftermath of the war, Iraqi leadership confirmed that their fear of U.S. nuclear retaliation was the reason for not employing chemical or biological agents against coalition forces.[8] With U.S. elimination of biological stockpiles and recent initiatives to eliminate chemical weapons, the nuclear option is the only "response in-kind" option available to U.S. planners.

The NPR cites extending deterrence to major allies as a third application of nuclear weapon policy. A credible U.S. nuclear deterrence posture has been the cornerstone of NATO security planning for the last 40 years. The continuing presence of U.S. nuclear weapons in Europe is a clear signal of U.S. commitment to the NATO alliance.

The last element of strategic policy listed in the NPR is countering nuclear proliferation. The Supreme Headquarters Allied Powers Europe (SHAPE) includes nuclear deterrence as one leg of a nuclear counterproliferation triad, the other legs being theater defenses and conventional forces. The perception of a diminished U.S. deterrent capability will encourage nuclear-capable countries, dependent upon U.S. security guarantees, to pursue their own deterrent capabilities. Recently France and Germany have signed a "common strategic concept" including provisions for the reassessment of nuclear deterrence in European security planning.[9]

The current "means" of nuclear deterrence is reflected in the 1997 Quadrennial Defense Review (QDR). The QDR supports START I force levels through FY 99 and recommends funding to continue research for the National Missile Defense (NMD) system. The QDR reaffirmed procurement of theater ballistic missile defense systems including Patriot Advanced Capability-3, Navy Area Defense Lower Tier and Theater-Wide Upper Tier systems and the Airborne Laser Program.

In summary, current deterrent strategy has been expanded under the 1994 NPR to include two new objectives: countering WMD and the discouragement of nuclear proliferation. Another significant change in policy is the emphasis on defensive systems as stipulated by the QDR. The offensive means of this strategy

are being significantly downsized as a result of the START process. A policy conflict looms on the horizon between the goal of further significant reductions in nuclear forces and maintaining credible force levels necessary to support counterproliferation aims. If forces are reduced below a certain perceived minimum threshold, even though parity is maintained with our only peer competitor, it will increase the potential for proliferation among our nuclear-capable allies.

THE POST COLD WAR THREAT

Throughout the Cold War, the "ends" of U.S. deterrent strategy remained focused on countering a monolithic Soviet nuclear and conventional threat. With the end of the Cold War, the once massive Soviet nuclear, chemical and biological aresenal has been replaced by a smaller, but much less stable and secure Russian arsenal. Additionally, the proliferation of all types of weapons of mass destruction and associated delivery systems, particularly among regional powers offer new challenges to current deterrence strategy as outlined in the 1994 Nuclear Posture Review.

Weapons of Mass Destruction (WMD) fall into four broad categories: nuclear, radiological, chemical and biological. The U.S. has devoted considerable resources to curbing the proliferation of these weapons and associated long range ballistic and cruise missile delivery technologies. These

efforts have centered around multilateral export controls of equipment, materials and technology; binding non-proliferation treaties and direct diplomacy. Despite successful negotiation of nuclear, chemical and biological non-proliferation treaties, proliferation of WMD continues.

Despite decades of arms control efforts, the nuclear threat has not receded in the post Cold War world. It consists of the large post-Soviet era arsenal now consolidated in Russia; China's arsenal; nuclear capable states such as India and "nuclear threshold states" such as North Korea, Iran and Iraq. In addition, there is demonstrated risk that this threat will further expand as former Soviet nuclear weapons, materials and technology leak out of Russia into the hands of terrorist organizations or rogue states such as Libya and Iran.

Russian strategic nuclear weapons are numerically constrained by the START I limits of approximately 6000 warheads agreed to by the Soviets. Of greater concern are the estimated 15,000 - 30,000 tactical nuclear weapons that in 1991 were stationed in 14 of the former Soviet Union's 15 republics plus additional fissile material capable of supporting construction of tens of thousands more weapons.[10] This situation is further exasperated by the fact these weapons and materials are now stored in scores of sites scattered throughout a politically and economically unstable Russia.

The leakage of former Soviet nuclear weapons, materials and

expertise out of the Russian Federation is one of the most pressing proliferation threats to U.S. security interests. Since 1992, there have been six documented cases of theft or illegal trafficking in fissile material.[11] These six incidents involved over 20 pounds of highly enriched uranium, more than was produced during the first three years of the Manhattan Project.[12] Russia lacks a site specific inventory system for fissile material and the slow process of dismantling excess warheads is overwhelming its ability to adequately safeguard the components. Continued erosion of the Russian economy and military infrastructure will further exasperate this potentially dire situation.

Radiological weapons of mass destruction comprise a category of WMD associated with nuclear terrorism. Radiological WMD consist of radioactive materials such as plutonium oxide combined with a dispersal device, such as a conventional explosive, to contaminate large population centers. At the other end of this spectrum, smaller amounts of powdered radioactive material could be manually dispersed into a ventilation system to create massive numbers of casualties. The ready availability of non weapons-grade materials such as Cobalt-60 and Cesium-137, or even reactor waste, cause these weapons to be a significant threat.

A recent example of this type of terrorism occurred in late 1995 when Chechen military leader Shamir Basayev directed the burial of a canister of Cesium-137 in Moscow's Izmailovsky Park and its subsequent discovery by a Russian news team.[13] Basayev

threatened to turn Moscow into an "eternal desert." Current efforts to control trafficking in weapons-grade materials will have little or no effect on the potential availability of radiological WMD.

The third, of the four categories of WMD are chemical weapons. The spectrum of chemical weapons extends from WWI era mustard and chlorine gas to modern nerve agents. Russia possesses the worlds largest stockpile of chemical weapons which it inherited from the former Soviet Union. Although a signatory to the Chemical Weapons Convention (CWC), in addition to several bilateral agreements with the U.S., Russia has been slow to destroy its 40,000 metric ton chemical arsenal.[14] Recently, Russian officials formerly affiliated with the Soviet chemical weapons program alleged that new generations of nerve agents had been developed, tested and produced.[15]

It is now known that at least one regional power, in addition to terrorist organizations, has employed chemical agents against its adversaries. The full extent of the Iraqi chemical and biological weapons program wasn't known until late 1995 when it was revealed that Iraq had deployed between 150 - 200 bombs and 25 missile warheads with either chemical or biological agents in its war with Iran.[16] At the beginning of the Gulf War, Iraq was capable of annually producing 1,000 tons of chemical weapons ranging from mustard gas to nerve agents.[17]

The final of the four categories of WMD are biological

weapons, often perceived as the "poor man's nuclear weapon." Biological weapons consist of living organisms or their associated toxins disseminated to cause death or disease in humans, animals or plants. They are considered strategic weapons and possess the same potential lethality, albeit delayed, as nuclear weapons. A 1993 congressional report stated that a crop-duster armed with 100 kilograms of anthrax spores could deliver a fatal dose to 3 million residents in the Washington, DC area.[18] Spores of anthrax bacteria can survive for decades, rendering the target area hazardous for a similar period of time.

Biological weapons programs employ the same biotechnology as modern pharmaceutical manufacturing enabling covert production using dual-use facilities and equipment. An August 1993 U.S. Office of Technology assessment report cites 12 countries suspected of having clandestine offensive biological weapons programs including China, Iran, Libya, North Korea, Russia, Syria and Vietnam. Of these countries, all but Vietnam also manufactures or assembles ballistic or cruise missile delivery systems.[19]

Biological weapons are less expensive to produce and stockpile than the cost of fielding modern conventional forces or developing nuclear technologies. A biological warfare arsenal can be seen as a cost-effective strategic deterrent. This threat has been deemed so significant that the Department of Defense has recently announced plans to inoculate all U.S. military personnel

with an anthrax vaccine.

From the standpoint of U.S. nuclear deterrence, the future threat posed by WMD is likely to increase. Many potential proliferators seek WMD as a relatively inexpensive means to enhance their national security. Many of the technologies associated with WMD development have legitimate civilian applications and are difficult to control. As increasingly advanced technologies trickle down to the third world, the capability and temptation to develop WMD and associated delivery systems will be difficult to resist.

WEAPONS OF MASS DESTRUCTION DELIVERY SYSTEMS

One final aspect of WMD proliferation that needs to be considered in future deterrence planning is the spread of ballistic and cruise missile technologies. It is estimated that 35 non-NATO countries possess ballistic missiles including Algeria, Belarus, Kazakhstan, Egypt, India, Israel, Pakistan and Saudi Arabia. Eighteen of these countries are potentially capable of installing nuclear, chemical or biological warheads.[20] Although the propulsion technology has existed since World War II, relatively few nations possess the capability to produce sophisticated terminal guidance systems necessary to make ballistic missiles sufficiently accurate for effective military use.

North Korea has developed, in financial partnership with

Iran, the 700 NM range No Dong missile and is reportedly developing a two stage variant, the Taepo Dong 2, with a range of 2,500 - 4000 NM.[21] Variants of the widely exported Scud missile, although able to penetrate all but the most sophisticated defense systems, lack an accurate terminal guidance system. This deficiency limits their ability to effectively deliver chemical or biological agents.

A relatively new concern is the potential proliferation of cruise missile technology. Over 70 countries, 40 in the developing world possess over 75,000 anti-ship cruise missiles with ranges to 100 kilometers.[22] The availability of relatively inexpensive GPS guidance and navigational systems enhances the likely conversion of a portion of these weapons to a land attack mode. Combined with one-meter-resolution satellite imagery, cruise missiles offer substantially more accuracy (by at least a factor of 10) and cost substantially less to develop than their export-restricted ballistic cousins.[23]

Currently the U.S. is spending only 10% of the total invested in missile defense on improving defenses against land attack cruise missiles.[24] Relatively short range anti-ship cruise missiles converted to land attack variants, launched from a ship or submarine, carrying several hundred pounds of a biological agent such as anthrax could infect millions in coastal urban areas.

ARMS CONTROL IMPLICATIONS

There is a direct link between arms control and deterrence strategy. Achieving strategic stability, the ultimate goal of arms control, will require a minimum level of credible strategic deterrence. Arms control will play a key role in defining nuclear force structure in the future and thus will directly and indirectly impact upon the "ends-ways-means" of nuclear deterrence. The Strategic Arms Reduction Treaty (START) and the Comprehensive Test Ban Treaty (CTBT) will directly impact the size, scope and modernization of U.S. nuclear forces. Multilateral treaties such as the Chemical and Biological Weapons Conventions, Nuclear Proliferation Treaty and the Missile Technology Control Regime will indirectly impact nuclear deterrent's counterproliferation role. The development of ballistic missile defense systems and the ongoing debate regarding compliance with the Anti-Ballistic Missile Treaty will ultimately impact dependence on nuclear deterrence.

The START I treaty, which was signed by the U.S. and the Soviet Union on 29 July 1991, established current offensive nuclear force ceilings of 1,600 deployed launch systems and 6000 warheads. START II, which was ratified by the U.S. Senate in January 1996, still awaits approval by the Russian Duma. Assuming START II ratification, full implementation will reduce the U.S. nuclear arsenal from 15,000 weapons in 1996 to approximately 10,000 including: 3,500 deployed strategic, 950

operational tactical, 2,500 "hedge" and 2,500 "inactive reserve" (tritium removed but intact).[25] In addition to the START limits, the U.S. has declared a unilateral moratorium on nuclear explosive testing and in September 1996, signed the Comprehensive Test Ban Treaty (CTBT). The U.S. nuclear arsenal is further constrained by an absence of funding for modernization or replacement in current or projected defense budgets.

On 10 April 1972, the Nixon Administration chose to forego pursuit of an offensive biological weapons capability and became a signatory of the Biological Weapons Convention (BWC). The BWC bans development, production and stockpiling of biological or toxin weapons. On 25 April 1997, the U.S. Senate ratified the Chemical Weapons Convention (CWC) which, like the BWC, required all parties to renounce possession and destroy all existing weapons in their arsenals. Ratification of these two accords leaves nuclear weapons as the only legitimate weapons of mass destruction in the U.S. arsenal capable of deterring WMD in-kind.

The Nuclear Proliferation Treaty (NPT) and the Missile Technology Control Regime (MTCR) share a common goal with nuclear deterrence, reducing nuclear missile proliferation. The NPT divides the signatories into nuclear haves and have-nots. Non-nuclear members cannot develop nuclear weapons and remain treaty members in good standing. The five nuclear members, including the U.S., agree to seek an early end to their nuclear arms race and pledge not to assist non-nuclear states in developing nuclear

weapons technology.[26] The U.S. initiated the MTCR in 1987 to control exports of missiles and missile technology for systems with payloads over 500 kilograms and ranges over 300 kilometers.[27] The MTCR now includes 16 signatories and pledges from seven other countries including Russia and China to abide by its guidelines.

The remaining area of arms control that has a potential impact on nuclear deterrence is the Anti-Ballistic Missile (ABM) Treaty. This treaty prohibits deployment of an ABM system for "defense of territory" or a "base for such defense."[28] Subsequent treaty provisions permit both sides a single ABM site with a ceiling of 100 launchers. The Reagan administration's 1984 Strategic Defense Initiative, the 1991 Defend America Act and current development of theater missile defenses have all raised treaty compliance issues.

Despite attempts to include verification mechanisms, allegations and admissions of treaty violations raises questions as to their ultimate effectiveness. Russian President Yeltsin admitted that the Soviet Union had maintained an active biological weapons program in clear violation of the BWC and that Russia had continued it.[29] In testimony before the Senate in February, 1997 the Director of the CIA identified six other countries with covert biological weapons programs including Iraq, Iran, China, Egypt, Taiwan and North Korea.[30] All six of these countries have either ratified or acceded to the BWC. Iraq's

advanced nuclear weapons research program was discovered in 1991 by UN inspectors. A NPT signatory, Iraq had been found to be in full compliance with NPT safeguards two months prior to the Gulf War by International Atomic Energy inspectors.[31]

Arms control will remain a major theme of U.S. foreign policy for the foreseeable future. The START process will continue to shape the means of nuclear deterrent strategy. The elimination of U.S. stockpiles of chemical and biological weapons raises the issue of deterring use of these WMD with nuclear forces. Development and implementation of ballistic missile defenses will provide an alternative to sole reliance on the deterrent value of nuclear retaliation in dealing with the emergence of ICBM, or cruise missile, capable regional powers with WMD. Finally, documented violations of existing "verifiable" treaties and the dual-use potential of chemical and pharmaceutical industries raise questions regarding the wisdom of placing too much reliance on arms control efforts, as an alternative to deterrence, to curb WMD proliferation.

DETERRENT OPTIONS

The Role of nuclear deterrence in the post Cold War world is now a subject of great debate. There is a growing body of opinion that the utility of the U.S. nuclear arsenal will soon be eclipsed by the current Revolution in Military Affairs (RMA). Throughout the Cold War, bipolar nuclear deterrence was central

to U.S. military strategy. The 1994 Nuclear Posture Review expanded the post Cold War role for deterrence to include possible armed confrontation with a WMD-capable adversary. The utility of nuclear weapons to deter a biological or chemical weapons-capable regional power or rogue state is central to the current debate. Options for deterring regional or unstable rogue regimes, armed with limited nuclear or chemical/biological weapons, will require different strategies than those developed to counter the large Soviet threat.

The destructive potential of a new generation of highly lethal conventional weapons, including precision guided munitions, stealth and electronic warfare technologies, was clearly demonstrated during the Gulf War. Advocates for changing current deterrent strategy, to minimize the importance of nuclear weapons, cite the increased accuracy and lethality of emerging conventional, information and electronic warfare technologies as more credible forms of regional WMD deterrence.

The U.S. is clearly entering a revolutionary period in conventional weapons technology. During the Gulf War, Precision Guided Munitions (PGMs) comprised only seven percent of conventional bombing munitions but were demonstrably 13 times more effective than non-guided gravity munitions.[32] Emerging technologies such as electronic strikes in the form of computer viruses, high power microwave detonations or conventional electromagnetic-pulse munitions have potential to completely

disable critical elements of an information-based economy.[33]

Proponents of an increased reliance on strategic conventional deterrence cite the following additional advantages:

- More flexible response options.
- Weapons effects more easily reversed.
- Avoidance of international condemnation.
- Reduced probability of triggering WMD retaliation.
- Consensus building among partners in coalition efforts.
- Compliance with Non-Proliferation Treaty objectives.
- Cost savings from a reduced nuclear arsenal.

It is estimated that reducing strategic nuclear forces to START II levels would save approximately $5 billion over the next seven years.[34]

Despite the ongoing RMA, conventional weapons have certain limitations that negate their deterrent effectiveness in certain situations. Despite dramatic increases in weapon accuracy, no conventional PGM is currently capable of destroying a hardened missile silo or deep underground facility.[35] Despite 900 sorties directed at known or suspected locations harboring Iraqi WMD facilities, post Gulf War inspection revealed many nuclear facilities were undamaged by the air campaign.[36] Conventional PGMs, despite their accuracy and lethality, lack the shock value of nuclear weapons. If deterrence were to fail, it is difficult to imagine an appropriate conventional weapon retaliatory response to a WMD attack involving hundreds of thousands of

casualties.

The main issue when considering a deterrent posture is the appropriateness of the response. This will ultimately impact credibility, which is a vitally important aspect of deterrent strategy. Conventional weapons can enhance the credibility of deterrence because we can and will use them. They provide an appropriate first strike or retaliatory strike against tactical use of non-nuclear WMD. Their appropriateness as retaliatory weapons for nuclear or large-scale biological attacks is questionable.

Nuclear weapons, by virtue of the current and projected limitations of conventional weapons, must remain an option in U.S. deterrent strategy. Despite the RMA, conventional weapons are incapable of assuming two of the strategic objectives of nuclear deterrence set forth in the 1994 NPR:

- A hedge against reversal of democratic reforms in Russia.
- To discourage or reduce nuclear proliferation.

Although they cannot replace nuclear weapons, conventional weapons can significantly enhance strategic deterrence by providing the national command authorities with more flexible, credible options for deterring regional powers with WMD.

CONCLUSIONS

The role of nuclear deterrence in the national security strategy has significantly expanded in the post Cold War world.

In addition to the traditional threat posed by the large Soviet arsenal, now controlled by a politically and economically unstable Russia, regional WMD proliferation adds a new and equally ominous dimension to that threat. The 1994 Nuclear Posture Review addressed these new concerns by expanding the "ends" of nuclear deterrence strategy to include the emerging regional WMD threat. There is considerable debate regarding the utility of nuclear weapons to counter this emerging threat.

The threat posed by WMD, despite international arms control efforts is expanding. The ability to covertly produce chemical and biological weapons in dual-use pharmaceutical and chemical facilities hinders verification and enforcement of non-proliferation efforts. The potential lethality of biological agents is comparable to nuclear weapons. To counter the superiority of U.S. conventional weapons technology, future adversaries will likely consider asymmetrical strategies involving biological or chemical weapons.

Arms control has significantly impacted the "ends-ways-means" of U.S. strategic deterrence strategy. The elimination of biological and chemical stockpiles leaves nuclear weapons as the only legitimate WMD in the U.S. inventory capable of response in-kind. Deep reductions of nuclear weapons, beyond those agreed to in START I and II will impact the credibility of U.S. extended nuclear deterrence guarantees and non-proliferation objectives. In the face of CIA revelations of numerous covert WMD development

programs, in clear violation of treaty agreements, it is dangerously naive to rely heavily on arms control to lessen the threat posed by WMD proliferation.

To deal with the multi-polar threat posed by regional WMD, a "one size fits all" strategy is unrealistic. Deterrent strategy must be tailored to respond effectively to different regional scenarios. For deterrence to be effective, it must be, above all else, credible. A potential enemy must believe that the U.S. has the will and the means to respond decisively and overwhelmingly should deterrence fail. The new generation of precision guided munitions and advances in electronic and information warfare technologies offer a flexible array of credible options for dealing with limited use of WMD. The limitations of conventional weapons, particularly their ineffectiveness against hardened or deep underground sites, mandates a continuing role for the nuclear option in deterrence strategy.

Future scenarios may exist where strategic deterrence is not applicable. Deterrence theory assumes an aggressor is rational, possesses fundamental values and some form of political structure that can be influenced. It also assumes a "smoking gun" for retaliation. These assumptions may not be valid in situations involving rogue nations or non-state actors. In these scenarios, strategic defenses, both active and passive may be the only option available to prevent and aggressor from achieving his objectives.

Finally, the changing threat environment and the Revolution in Military Affairs mandate changes in strategic deterrence strategy. It is time to move away from a strategy based solely on the threat of nuclear retaliation, "assured destruction," to one which denies the enemy any possible advantage from the use of WMD, "assured survival." This strategy would incorporate the more credible retaliatory options provided by advanced conventional weapons to deter limited use of WMD, while retaining the nuclear option to deter nuclear or more general use of chemical or biological agents. It would also integrate active and passive defenses to counter proliferation of delivery systems. An "assured survival" strategy will provide the national command authorities with a flexible array of credible deterrent options necessary for dealing with the diverse 21st century WMD threat.

(Word count 6,477)

ENDNOTES

[1] Robert D. Orton and Robert C. Neumann, "The Impact of Weapons of Mass Destruction on Battlefield Operations," Military Review LXXIII (December 1993): 64.

[2] Y. Harkabi, Nuclear War and Nuclear Peace (Jerusalem: Isreali Program for Scientific Translations, 1966), 8.

[3] "Strategic Assessment 1996: Instruments of U.S. Power." National Defense University (1996): 203.

[4] David A. Rosenberg, "U.S. Nuclear Strategy: Theory versus Practice," Bulletin of the Atomic Scientists vol. 43, no. 2 (1987): 22.

[5] Ibid., 23.

[6] Forrest Waller, "Strategic Offensive Arms Control," in Arms Control: Toward the 21st Century, ed. Jeffrey A. Larsen and Gregory J. Rattray (Boulder: Lynne Rienner Publishers, 1996), 110.

[7] Ibid.

[8] Robert G. Joseph and John F. Reichart, "Deterrence and Defense in a Nuclear, Biological and Chemical Environment," Comparative Strategy 15 (January 1996): 69.

[9] Jacquelyn K. Davis, Charles M. Perry and Andrew C. Winner, "The Looming Alliance Debate over Nuclear Weapons," Joint Forces Quarterly (Spring 1997): 84.

[10] Graham T. Allison, Owen R. Cote Jr., Richard A. Falkenrath, and Steven E. Miller, "Avoiding Nuclear Anarchy," The Washington Quarterly (Summer 1997): 189.

[11] Ibid., 190.

[12] Ibid., 191.

[13] Center for Strategic Leadership, Report of the Executive Seminar on Special Material Smuggling (Carlisle PA: U.S. Army War College, 1996), 25.

[14] Marie Isabelle Chevrier and Amy Smithson, "Preventing the Spread of Arms: Chemical and Biological Weapons," in Arms Control: Toward the 21st Century, ed. Jeffrey A. Larsen and Gregory J. Rattray (Boulder: Lynne Rienner Publishers, 1996), 207.

[15] Ibid.

[16] Joseph F. Sopko, "The Changing Proliferation Threat," Foreign

Policy, no. 105 (Winter 1996-1997): 5.

[17] Ibid.

[18] Ibid., 6.

[19] Sidney Bearman, "Strategic Policy Issues," Strategic Survey (1996-1997): 23.

[20] "Circles of Fear," The Economist, vol. 342 (January 4, 1997): 33.

[21] Ibid.

[22] Sidney Bearman, 3.

[23] Ibid.

[24] Ibid., 1.

[25] Kathryn R. Schultz, "U.S. Nuclear Posture and Doctrine Since the End of the Cold War," Center for Defense Information (4 December 1996): 1.

[26] Virginia I. Foran, "Preventing the Spread of Arms: Nuclear Weapons," in Arms Control: Toward the 21st Century, ed. Jeffrey A. Larsen and Gregory J. Rattray (Boulder: Lynne Rienner Publishers, 1996), 180.

[27] Jo L. Husbands, "Preventing the Spread of Arms: Delivery Means and Conventional Weapons," in Arms Control: Toward the 21st Century, ed. Jeffrey A. Larsen and Gregory J. Rattray (Boulder: Lynne Rienner Publishers, 1996), 239.

[28] Sidney N. Graybeal and Patricia A. McFate, "Strategic Defensive Arms Control," in Arms Control: Toward the 21st Century, ed. Jeffrey A. Larsen and Gregory J. Rattray (Boulder: Lynne Rienner Publishers, 1996), 122.

[29] Marie Isabelle Chevrier and Amy E. Smithson, 213.

[30] Ibid., 217.

[31] Virginia I. Foran, 185.

[32] Andrew F. Krepinevich, Jr., "Forging a Path to a Post-Nuclear U.S. Military," Issues in Science and Technology (Spring 1997): 81.

[33] Ibid., 82.

[34] Ibid.

[35] Gregory A. Pickell, "Strength in an Unsettled World: The Role of Nuclear Weapons in Nuclear Nonproliferation and Deterrence,"

Comparative Strategy, vol. 15, issue 1 (January 1996): 84.

[36] Ibid., 85.

BIBLIOGRAPHY

Allison, Graham T., Owen R. Cote Jr., Richard A. Falkenrath, and Steven E. Miller, "Avoiding Nuclear Anarchy," The Washington Quarterly (Summer 1997): 185-198.

Bearman, Sidney "Strategic Policy Issues," Strategic Survey (1996-1997): 1-39.

Center for Strategic Leadership, Report of the Executive Seminar on Special Material Smuggling. Carlisle PA: U.S. Army War College, 1996.

Chevrier, Marie Isabelle and Amy Smithson, "Preventing the Spread of Arms: Chemical and Biological Weapons," in Arms Control: Toward the 21st Century, ed. Jeffrey A. Larsen and Gregory J. Rattray, 201-227. Boulder: Lynne Rienner Publishers, 1996.

"Circles of Fear," The Economist, vol. 342 (January 4, 1997): 33-35.

Davis, Jacquelyn K., Charles M. Perry and Andrew C. Winner, "The Looming Alliance Debate over Nuclear Weapons," Joint Forces Quarterly (Spring 1997): 80-86.

Forqan, Virginia I. "Preventing the Spread of Arms: Nuclear Weapons," in Arms Control: Toward the 21st Century, ed. Jeffrey A. Larsen and Gregory J. Rattray 175-200. Boulder: Lynne Rienner Publishers, 1996.

Graybeal, Sidney N. and Patricia A. McFate, "Strategic Defensive Arms Control," in Arms Control: Toward the 21st Century, ed. Jeffrey A. Larsen and Gregory J. Rattray 119-137. Boulder: Lynne Rienner Publishers, 1996.

Harkabi, Y., Nuclear War and Nuclear Peace. Jerusalem: Isreali Program for Scientific Translations, 1996.

Joseph, Robert G. and John F. Reichart, "Deterrence and Defense in a Nuclear, Biological and Chemical Environment," Comparative Strategy 15 (January 1996): 59-73.

Joseph, Robert G., "Nuclear Deterrence and Regional Proliferators," The Washington Quarterly (Summer 1997): 167-175.

Karp, Aaron, "The New Politics of Missile Proliferation," Arms Control Today (October 1996): 10-14.

Krepinevich, Andrew F. Jr., "Forging a Path to a Post-Nuclear U.S. Military," Issues in Science and Technology (Spring 1997): 79-84.

Nitze, Paul H., "Is it Time to Junk Our Nukes?" The Washington

Quarterly (Summer 1997): 97-101.

Orton, Robert D. and Robert C. Neumann, "The Impact of Weapons of Mass Destruction on Battlefield Operations," Military Review LXXIII (December 1993): 64-72.

Pickell, Gregory A., "Strength in an Unsettled World: The Role of Nuclear Weapons in Nuclear Nonproliferation and Deterrence," Comparative Strategy vol. 15, issue 1 (January 1996): 81-89.

Quinlan, Sir Michael, "The Future of Nuclear Weapons in world Affairs," The Washington Quarterly (Summer 1997): 137-141.

Rosenberg, David A., "U.S. Nuclear Strategy: Theory versus Practice," Bulletin of the Atomic Scientists vol. 43, no. 2 (1987): 20-28.

Schultz, Kathryn R., "U.S. Nuclear Posture and Doctrine since the End of the Cold War," Center for Defense Information (4 December 1996): 1-16.

Schlessinger, James R., "Nonproliferation and U.S. Nuclear Policy," The Washington Quarterly (Summer 1997): 103-106.

Sokov, Nikolai, "Russia's Approach to Nuclear Weapons," The Washington Quarterly (Summer 1997): 107-113.

Sopko, Joseph F., "The Changing Proliferation Threat," Foreign Policy, no. 105 (Winter 1996-1997): 1-18.

"Strategic Assessment 1996: Instruments of U.S. Power," National Defense University (1996).

Tkacik, Michael Patrick, "Nuclear Deterrence, Arms Control, and Multipolarity: An Argument for Incremental Policy Change," Armed Forces and Society vol. 22 (Spring 1996): 357-377.

Waller, Forrest, "Strategic Offensive Arms Control," in Arms Control: Toward the 21st Century, ed. Jeffrey A. Larsen and Gregory J. Rattray, 99-118. Boulder: Lynne Rienner Publishers, 1996.

Weldon, Curt, "An Urgent Need for a Strong Missile Defense," USA Today (May 1997): 12-14.